

SCIENCE

And Technology Program



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Effects of Reclamation projects on aquatic and riparian habitats are numerous and diverse. Project-caused changes may result in poor and degraded water quality, changes in flow regimes and velocities, and impacts on riparian vegetation. Stream and river bioassessments of water quality impairment caused by reservoirs or pollution sources below water projects present special problems. Elements of biological communities that are often used in assessing water quality are affected by water projects, making it difficult to use existing bioassessment techniques to detect impacts. Reclamation must develop a better understanding of water quality impacts on aquatic biota within the context of water project operations. Improved understanding of impacts to stream and river ecology will help in determining appropriate project operation and water release patterns and provide accurate, low-cost methods for assessing physical and chemical aquatic conditions and ecological functioning of riparian zones.

The overall goal was to develop new and improved field techniques and laboratory methods to identify, evaluate, and enhance stream and river water quality and to offer guidance in correcting water quality problems associated with natural and managed water systems.

- Biological (hyporheic, Surber, and leaf pack) and chemical (trace elements and hardness) samples were collected from Lake Fork, in the Arkansas River drainage.
- Marking and tagging of riparian butterflies was completed at the Bill Williams River.
- Collection of samples associated with aquatic invertebrate communities found below reservoirs was initiated.
- Reconnoitered salmon redds in Sacramento River tributaries for possible hyporheic study.

Federal Agencies (USGS-BRD and USGS-NAWQUA) and Reclamation Regional and Area Offices.

Roline, R. A. and S. M. Nelson. 1999. Environmental and Water Quality Improvements to the East Fork of the Upper Arkansas River, Colorado, as a result of mine drainage remediation efforts. Paper presented at the 1999 DOI Conference on the Environment.

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Nelson, S. M. and R. A. Roline. 1999. Relationships Between Metals and Hyporheic Invertebrate Community Structure in a River Recovering from Metals Contamination. *Hydrobiologia* 397:211-226.

Nelson, S. M. Butterflies go with the flow. *American Butterflies* 7(3):12-16, 1999.